REMARKS/ARGUMENTS

The present amendment is submitted in response to the Office Action dated June 16, 2008, which set a three-month period for response, making this amendment due by September 16, 2008.

Claims 15-20 and 24-27 are pending in the application.

In the Office Action, the specification was objected to for an informality. Claims 15-20 and 24-27 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 3,437,783 to Lemelson in view of U.S. Patent No. 6,410,878 to Guerin et al.

In the present amendment, the specification has been amended on page 6 to address the objection.

The Applicant respectfully submits that the newly cited combination of the Lemelson and Guerin patents do not render obvious the subject matter of the pending claims.

The present application deals with a method of producing a porous, plate-shaped metallic composite. Such composites are used as light construction elements or sound damping panels (specification, page 1, lines 8 through 10). These types of composites are used particularly in dampening panels in the exhaust channel of a gas turbine or the like. The high temperature and high pressure in such applications require restrictions in the use of materials, which is why metallic composites are preferred.

The production of such composites is known generally in the state of the art. As described in the present application, these types of metallic composites are

generally manufactured by a sintering process, which, however, is associated with numerous drawbacks. Therefore, the present invention resolves these drawbacks by providing a method of producing a porous, plate-shaped metallic composite, including the steps of:

1) providing metallic fibers; and

2) compressing and fusing said metallic fibers together in a single process step, wherein the fusing is performed with pulse fusing surface-shaped electrodes, wherein said pulse fusing is capacitor pulse fusing, and wherein said capacitor pulse fusing comprises applying a current pulse of up to 200,000 A for less than 1 s, such that an electrical resistance is formed from fiber-to-fiber of the metallic fibers compressed together, whereby said electrical resistance leads to heating of the material and a point-type fusing of said metallic fibers with a respective closest metallic fiber at the compressing and fusing location.

The conditions according to the above method lead to a reliable, homogeneous metal composite whose quality is substantially equal over its entirety.

Lemelson discloses a method of producing a matte structure including arrays of welded filaments. The filament elements are made of metal and are provided in a mold in which the filaments are compressed and at the same time exposed to an electric current in order to weld the filaments.

Guerin discloses a method for producing a flame support for a gas burner, in which metal fibers are compressed in order to form a mat of fibers (see column 2, lines 36 to 39). Subsequently, the fibers are welded together by a pulse welding process wherein opposing surfaces of the mat are contacted by electrodes in order

to introduce electrical current to the mat. The pulse is generated by discharging a capacitor which has an electric voltage of at least 1000 Volts (column 3, lines 1 to 6).

The present invention differs from this state of the art by providing pulse fusing rather than conventional welding as disclosed in Lemelson as well as certain special conditions in order to obtain a proper and reliable metallic composite.

As disclosed in this reference, Lemelson is suited to create arrays of welded filaments (see Lemelson, column 1, lines 14 through 16). Therefore, Lemelson's method is not suited for providing a continuous production of metallic composites. Moreover, the metallic composite is not homogeneous, which is caused by the electric current provided to the matte flowing inhomogeneously through the mat. The result is an inhomogeneous thermal effect so that fibers are welded and provide a low electrical resistance, which causes an increase of the current, while other locations of the matte are not welded due to a lack of sufficient electrical current.

Moreover, the welding process according to Lemelson requires adequate time in order to create a sufficient welding result. This time consumption increases the non-homogeneity of the welding process so that such a matte has the disadvantages as described in the present application.

A stated object of the present invention is to improve the characteristics of a metallic composite so that a more homogeneous welding can be achieved. This object is solved by pending claim 1.

Lemelson fails to provide any teaching or suggestion to the person skilled in the art to modify his teaching as taught in the present application and as defined in claim 1. There is no motivation for the practitioner to replace the welding process

described in Lemelson by a capacitor pulse welding process according to the present invention. Therefore, Lemelson does not render obvious the present invention as defined in claim 1.

Even if Lemelson is combined with Guerin, as proposed by the Examiner, the practitioner would not be led to the subject matter of the present invention. Guerin teaches using a pulse electro-weld in order to form a matte of metallic fibers that are welded together. However, according to Guerin, this kind of welding is not executed simultaneously with the compressing step of the fibers (see column 2, lines 16 through 21). The teachings of Guerin require that the fibers must be compressed in a first step, after which welding is performed in a second step. This is contradictory to the teaching of Lemelson, which requires the step of compressing the fibers and welding them at the same time. Therefore, one skilled in the art would not have considered Guerin in order to improve the teaching of Lemelson.

Furthermore, Guerin's method would not lead to a metallic composite according to the present invention because the conditions of the welding pulse are not suitable. According to Guerin, the time period for the pulse welding is 10 to 20 microseconds. The voltage should not fall below 1000 Volts (see Guerin, column 3, lines 1 through 6). Moreover, the electric current should not fall below 100 A; preferably it should be higher than 10,000 A.

In contrast, the present invention should be executed in the time range of 1 s, preferably in the time range of 10 milliseconds. This time is necessary to provide a proper distribution of the electric current in the matte so that a proper welding over the complete matte can be achieved. A much smaller time period, as disclosed by Guerin, leads to inhomogeneous current flow through the matte and, therefore, to an

uneven welding process over the matte. Because of interference inductivities, the electric current concentrates on a few single paths, creating the risk of overheating and destroying the fibers. Thus, a very short period and the conditions for the pulse, as disclosed by Guerin, will not provide good welding results. The high voltage is an additional problem which increases the drawbacks noted above.

Therefore, the method according to the present invention only uses a low voltage, which is clear for the person skilled in the art. An easy calculation for the person skilled in the art can verify this fact.

Regarding Guerin's method, that is, using a voltage of 1000 Volts, and an electric current of 10,000 A in a time period of 10 micro-seconds, an energy of 100 J is the result. Assuming that this energy would be sufficient for providing a welding result, the technical conditions of 10 milliseconds and a current of 200,000 A according to the present invention lead to an electric voltage of 0,05 Volt.

Even if one would challenge this calculation, and one would use the conditions of 1000 Volt AND 200,000 A at 10 milliseconds, the energy would be 1 MJ. However, this amount of energy corresponds to more than 200 g of TNT. These conditions correspond to an explosion. For the person skilled in the art, it is clear that proper welding process cannot be executed under such conditions.

Therefore, it is clear for the person skilled in the art that the pulse welding according to the present invention must be executed at low voltage, in distinct contrast to Guerin.

Withdrawal of the rejection under Section 103 is therefore respectfully requested. It is respectfully submitted that since the prior art does not suggest the desirability of the claimed invention, such art cannot establish a prima facie case of

obviousness as clearly set forth in MPEP section 2143.01. Please note also that the modification proposed by the Examiner would change the principle of operation of the prior art, so that also for this reason the references are not sufficient to render the claims prima facie obvious (see the last paragraph of the aforementioned MPEP section 2143.01).

The application as amended is believed to be in condition for allowance. However, should the Examiner have any comments or suggestions, or wish to discuss the merits of the application, the undersigned would very much welcome a telephone call in order to expedite placement of the application into condition for allowance.

Respectfully submitted,

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